

SECTION 600: CRITICAL AQUIFER RECHARGE AREAS

18.16.605. PURPOSE

The intent of this Section is to provide water quality protection associated with aquifer recharge areas through the regulation of land use activities that pose a potential contaminant threat or could increase the vulnerability of the aquifer. It is the policy of Kitsap County to accomplish the following:

1. Identify, preserve and protect aquifer recharge areas and prevent degradation of the quality of potable groundwater;
2. Recognize the relationship between surface and groundwater resources; and,
3. Balance competing needs for water while preserving essential natural functions/processes.

18.16.610. CRITICAL AQUIFER RECHARGE AREA CATEGORIES

A Critical Aquifer Recharge Area is a geographical area which provides the recharge to an aquifer(s) which is a current or potential potable water source and, due to its geological properties, is highly susceptible to the introduction of pollutants, or because of special circumstances, has been designated as a Critical Aquifer Recharge Area in accordance with WAC 365-190-080 by the County. Critical Aquifer Recharge Areas under this Ordinance may be established based on general criteria or specifically designated due to special circumstances.

A. Category I: Critical Aquifer Recharge Areas.

1. The following *general criterion* is established to designate Critical Aquifer Recharge Areas:

Wellhead Protection Zones around Group A Water System supply wells:

- a. Areas inside the one-year time of travel zone for Group A Water System wells, calculated in accordance with the Washington State Well Head Protection Program.
 - b. Five year time of travel zones in Wellhead Protection Areas are included as critical aquifer recharge areas under the following condition: The five year time of travel zone is included when the well draws its water from an aquifer that is at or above sea level and is overlain by permeable soils listed in Section 18.16.610.B.a. without an underlying protective impermeable layer (see below).
2. The following has been designated a critical aquifer recharge area due to *special circumstances*:

Hansville Aquifer Recharge Area:

The Hansville Aquifer Recharge Area has been designated as a Critical Recharge Area under the County's SEPA Ordinance. The Hansville Aquifer Recharge Area is a significant potable water supply that has been deemed to be highly susceptible to the introduction of pollutants.

In the future, additional areas such as the 10-year time of travel zones for wells or other Aquifer Recharge Areas of Concern, as identified through the County Groundwater Management Plan, Well Head Protection Analysis or other studies which identify areas of special circumstances, will be considered for designation as Critical Aquifer Recharge Areas.

B. Category II: Aquifer Recharge Areas of Concern. Areas which provide recharge to aquifers that provide current or potential potable water supplies and are vulnerable to contamination, and meet any one of the following General Criteria:

1. Highly Permeable Soils:

Locations where surface soil layers are highly permeable: Soils that have relatively high permeability high infiltration potential may provide for groundwater recharge, but also may enhance transfer of contaminants from the surface to ground water. For these reasons the locations where surface soils are highly permeable are considered Aquifer Recharge Areas of Concern.

The general location and characteristics of soils in Kitsap County is given in the Soil Survey of Kitsap County by the US Department of Agriculture, Natural Resources Conservation Service (SCS). The soil survey information is available on the Kitsap County Geographic Information System (GIS). The following soil types are considered to have relatively high permeability and are Aquifer Recharge Areas of Concern.

The following soils have relatively high infiltration:

<u>SCS Soil Name</u>	<u>SCS Soil Map Units</u>
Grove	11, 12, 13
Indianola	18, 19, 20, 21
Neilton	34, 35, 36
Norma	37, 38
Poulsbo/Ragnar	41, 42, 43, 44, 45, 46, 47

2. Areas above Shallow Principal Aquifers:

Surface areas above shallow, principal aquifer(s) (see Appendix F, Section 800) which are not separated from the underlying aquifers by an impermeable layer that provides adequate protections to preclude the proposed land use from contaminating the shallow aquifer(s) below, are considered Aquifer Recharge Areas of Concern. This generally includes principal aquifers in subsurface hydro geologic units Og1, Og1a, Og2 and portions of Og3 that are within 300 feet of the ground surface.

3. **Areas with high concentration of Group B Water System Well and private domestic wells:** Locations with well concentrations of 36 map units or more within a one-half mile radius of the proposed land use are considered Aquifer Recharge Areas of Concern.

18.16.615. DEVELOPMENT STANDARDS

Standards for development shall be in accordance with the provisions below and the requirements of the underlying zoning.

- A. A hydrogeological report will be required on sites that have been identified as having characteristics with high infiltration rates, or having a high Aquifer recharge or infiltration potential for land uses identified in Table 5, unless determined unnecessary upon coordination with agencies with jurisdiction (Bremerton-Kitsap County Health District and/or affected water purveyors). This evaluation shall apply to impacts on both groundwater and surface water, as it relates to recharge areas (see requirements in Special Reports, Section 700).
- B. Affected water purveyors will be notified and requested to comment during the preliminary phases of the County's review process on the proposed land use and potential impacts. The purveyor may recommend appropriate mitigation to reduce potential impacts. The Department will consider these recommendations to develop appropriate permit conditions.
- C. This section shall not affect any right to use or appropriate water as allowed under State or Federal law. In addition, these requirements do not apply to those activities which have potential contaminant sources below threshold amounts as set forth in applicable State RCWs, or local regulations.

In addition to the general standards above, the following will apply:

1. **Category I: Critical Aquifer Recharge Areas.**

Land uses identified in Table 5 are prohibited in Critical Aquifer Recharge Areas. Requests for waivers shall include a hydrogeological report which includes a detailed risk-benefit analysis that considers credible, worst case scenarios. The waiver will be evaluated and treated as a Special Use Review, similar to the process in the Wetlands Section, by the review Department, the Health District, and the affected water purveyors.

2. **Category II: Aquifer Recharge Areas of Concern.**

Applicants proposing operations that pose a potential threat to groundwater as defined in Table 5 in Aquifer Recharge Areas of Concern may be required to submit a hydrogeological report. The scope of the report shall be based on site-specific conditions. The need for additional information will be determined by the Department, the Health District and the affected water purveyor. Based on the results of the report, controls, mitigation, and/or other requirements will be established as a prerequisite for the development proposal being approved.

3. The Department will also notify the Health District and affected water purveyors through the environmental review process, when those development activities listed in Table 5 are proposed outside the areas designated Critical Aquifer Recharge Areas and Aquifer Recharge Areas of Concern.

Table 5: Operations With Potential Threat to Groundwater

<p>A. Above & Below ground storage tanks</p> <ol style="list-style-type: none"> 1. Hazardous and industrial waste treatment 2. Hazardous and industrial waste storage 3. Hazardous material storage <p>B. Animal feedlots</p> <p>C. Commercial operations</p> <ol style="list-style-type: none"> 1. Gas stations/service stations/truck terminals 2. Petroleum distributors/storage 3. Auto body repairs shops/rust proofers 4. Auto chemical supply storers/retailers 5. Truck, automobile, and combustion engine repair shops 6. Dry cleaners 7. Photo processors *8. Auto washes *9. Laundromats *10. Beauty Salons 11. Research or chemical testing laboratories which handle significant quantities of hazardous materials 12. Food processors/meat packers/slaughter houses 13. Airport maintenance/fueling operation areas 14. Junk and salvage yards 15. Storing or processing manure, feed, or other agriculture by products by commercially permitted businesses 16. Large scale storage or use of pesticides, insecticides, herbicides, or fertilizer by commercial or agricultural operations. <p>D. Deep injection wells</p> <ol style="list-style-type: none"> 1. Waste-water disposal wells 2. Oil and gas activity disposal wells 3. Mineral extraction disposal wells <p>D. De-icing salts storage piles</p> <p>*If not on a sewer system with a treatment plant.</p>	<p>F. Industrial operations</p> <ol style="list-style-type: none"> 1. Furniture strippers/painters/finishers 2. Concrete/asphalt/tar/coal companies 3. Industrial manufacturers: chemicals, pesticides/herbicides, paper, leather products, textiles, rubber, plastic/fiberglass, silicone/glass, pharmaceuticals, electrical equipment 4. Metal platers/heat treaters/smelters/annealers/descalers 5. Wood preserves 6. Chemical reclamation facilities 7. Boat refinishers <p>G. Land application</p> <ol style="list-style-type: none"> 1. Waste-water application (spray irrigation) 2. Waste-water byproduct (sludge) application 3. Petroleum refining waste application 4. Hazardous waste applications <p>H. Landfills</p> <ol style="list-style-type: none"> 1. Industrial hazardous and non-hazardous landfill 2. Municipal sanitary landfill <p>I. Material transfer operations</p> <ol style="list-style-type: none"> 1. Hazardous and industrial waste transfers 2. Hazardous material transfers <p>J. Materials stockpiles</p> <p>K. Mining and mine drainage</p> <p>L. On-site Septic Systems (LOSS category) of greater than 14,500 G.P.D. capacity without pre-treatment</p> <p>M. Pipelines</p> <ol style="list-style-type: none"> 1. Hazardous and industrial waste transfer 2. Hazardous material transfer <p>N. Radioactive disposal sites</p> <p>O. Sand and gravel mining operations</p>
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County's Zoning Ordinance. Where this plan is required for the protection of an eagle habitat, the eagle habitat management plan shall normally be prepared by the Department of Wildlife, as required under the Bald Eagle Management Rules.

III. GEOTECHNICAL REPORT AND GEOLOGICAL REPORT

A. A *geotechnical report* shall include a description of the site geology, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, opinions and recommendations of the adequacy of the site to be developed, the effects of groundwater interception and infiltration, seepage, potential slip planes, and changes in soil bearing strength, and the impacts of the proposed development and appropriate mitigating measures. A geotechnical report may contain information obtained with subsurface investigative measures such as test pit digging, soil boring, water well installation or Dutch Cone Penetrometer investigations. Reports containing engineering design recommendations; i.e., recommendations for foundations (loading, sizing, depth, or settlement estimates), pile or pier design, retaining structures, or recommendations for construction on slopes steeper than 30%, must be prepared by or in conjunction with a licensed geotechnical engineer as defined below.

A *geological report* shall include the above, with the exception of engineering design recommendations, and need not make use of subsurface investigative measures. As the report will not include engineering recommendations, a geological report may be prepared by a geologist or engineering geologist as defined below.

B. *Geotechnical reports* shall be prepared by a geotechnical engineer (a civil engineer licensed by the State of Washington who is knowledgeable of regional geologic conditions and who has at least four years professional experience in landslide and/or seismic hazard evaluation). *Geological reports* may be prepared by a geologist, engineering geologist or geotechnical engineer knowledgeable in regional geologic conditions and having at least four years professional experience in site evaluation and development studies, and landslide and/or seismic hazard evaluation.

C. Report recommendations for siting structures in high risk areas shall be based on existing site conditions rather than measures that have not yet been successfully approved, designed or constructed (e.g., slope recontouring, slope retaining walls, vegetation improvements, bulkheads, etc.). Shoreline bulkheads and retaining walls may only be utilized as an engineering solution where it can be demonstrated that an existing residential structure cannot be safely maintained without such measures, and that the resulting retaining wall is the minimum necessary to provide a stable building area for the structure.

IV. HYDROGEOLOGICAL REPORT

A hydrogeological report shall be required for certain proposed operations based on a consultation with the appropriate local and State agencies. The report shall address the impact the proposed land use will have on both the quality and quantity of the water

transmitted to the Aquifer. The report shall also address the types of pesticides and herbicides and fertilizers that can safely be used for the care of landscaping proposed by the applicant.

1. The report shall be submitted to the reviewing authority and address, at a minimum, the following criteria:
 - a. Surficial soil type and geologic setting;
 - b. Location and identification of wells within 1000 feet of the site;
 - c. Location and identification of surface water bodies and springs within 1000 feet of the site with recharge potential;
 - d. Description of underlying aquifers and aquitards, including water level, gradients and flow direction;
 - e. Available surface water and groundwater quality data;
 - f. Effects of the proposed development on water quality;
 - g. Sampling schedules required to assure water quality;
 - h. Discussion of the effects of the proposed development on the groundwater resource;
 - i. Recommendations on appropriate BMP's (Best Management Practices) or mitigation to assure no significant degradation of groundwater quality; and,
 - j. Other information as required by the Bremerton-Kitsap County Health District.
2. The hydrogeologic report shall be prepared by a professional geologist/hydrologist or by a soil scientist with a strong background in geology as demonstrated by course work from an accredited college or university and/or has a minimum of five years experience.
3. Applications for development or operations with underground storage of petroleum products will be processed using the appropriate procedure as specified in existing Kitsap County Ordinances.
4. Analysis for a specific parcel(s), using the criteria outlined below, will be employed to determine if the soils present require a Recharge Area Designation. Data collection will include, at a minimum: Six soil logs to a depth of 10 feet (or to a depth 4 feet below the lowest proposed excavation point which ever is greater) for each acre in the parcel(s) being evaluated. At least one well which is 200 feet or greater in depth with an adequate drilling report must be available within one mile. The associated data shall be analyzed and included in the hydrogeologic report to determine the presence of highly permeable soils with the Recharge Area Designation.
5. For development proposals within Aquifer Recharge Areas of Concern, the hydrogeological report may be based on quarter-quarter section bases locations where the number of wells within a half mile radius is 36 or more, and are

designated Aquifer Recharge Areas. To facilitate computer analysis, the evaluation may be done on a quarter-quarter section basis using the quarter-quarter section in which a parcel of interest is located and all the surrounding quarter-quarter sections, in place of the half mile circle.

Appendix C: Kitsap County's GIS Database of Critical Areas Information

KITSAP COUNTY'S GIS DATABASE OF CRITICAL AREAS INFORMATION		
CRITICAL AREA*	DATA	SOURCE
Wetlands	National Wetlands Inventory	U.S. Fish and Wildlife Service
	Hydric Soils, Soil Survey of Kitsap County Area, Washington	U.S. Dept. Of Agriculture, Soil Conservation Service
Aquifers	Critical Aquifer Recharge Areas	Kitsap PUD #1
	Aquifer Recharge Areas of Concern	Kitsap PUD #1
	Principle Aquifers	Kitsap PUD #1
	Permeable Soils, Soil Survey of Kitsap County Area, Washington	U.S. Dept. Of Agriculture, Soil Conservation Service
Fish & Wildlife Habitat Conservation Areas	National Wetlands Inventory	U.S. Fish and Wildlife Service
	Non-Game & Priority Habitat and Species Database	State Dept. Of Fish & Wildlife
	Washington Rivers Information System Database	State Dept. Of Fish & Wildlife
	Commercial and Recreational Shellfish Area Inventory	State Dept. Of Health
	Waters of the State	State Dept. Of Natural Resources
	Costal Zone Atlas of Washington, Vol. Ten	State Dept. Of Ecology
Frequently Flooded Areas	Flood Insurance Rate Map	Federal Emergency Management Agency
Geologically Hazardous Areas	Costal Zone Atlas of Washington, Vol. Ten	State Dept. Of Ecology
	Quaternary Geology and Stratigraphy of Kitsap County	Jerald Deeter, 1979
	Soil Survey of Kitsap County Area, Washington	U.S. Dept. Of Agriculture, Soil Conservation Service

* Critical Areas as identifies under RCW 36.70A.030 (5).

Appendix F: Kitsap County Shallow Principal Aquifer Listing

KITSAP COUNTY SHALLOW PRINCIPAL AQUIFER LISTING

The following is a list of shallow principal aquifers that have been designated by an overlay as "Aquifer Recharge Areas of Concern."

<u>Qg1a</u>	<u>Approximate Elevations</u>
Hansville	+250
Gorst	+ 50
North Lake (McCormick Woods)	+300
Port Gamble	+100
<u>Qg2</u>	
Island Lake (upper)	+150
Port Gamble South	-50
Wilson Creek	+150
<u>Qg3</u>	
Banger (upper)	+100
Clam Bay	0
Edgewater	+130
Island Lake	+150
Kingston (upper)	-25
Poulsbo	+225
Manette-Bremerton North	0
Seabeck	+100
Squamish-Miller Bay	0
Yukon	0